

ago; and a discussion followed as to the presence of additional forms, some attributing it to insects, frogs, and other minor aquatic animals, and others to the wild ducks that frequent this brook through the summer season.

W. A. MURRILL,
Secretary pro tem.

NOVEMBER 10, 1908

The Club met at the American Museum of Natural History and was called to order by Vice-President Burgess at 8:15 P. M. About 95 persons were present.

After the reading of the minutes of the meeting of October 29, Dr. N. L. Britton delivered the lecture of the evening on "Trees of the Vicinity of New York". The lecture was illustrated by lantern slides from the Van Brunt collection and was of a popular nature. The trees were taken up in a biological order, beginning with the gymnosperms, and the photographs exhibited illustrated both the general habit of the trees discussed and details of their flowers and fruit.

MARSHALL A. HOWE,
Secretary pro tem.

OF INTEREST TO TEACHERS

THE CAMERA LUCIDA FOR CLASS DEMONSTRATION

BY ROBERT GREENLEAF LEAVITT

So far as I have seen, the use of the camera lucida for purposes of demonstration with classes, as now to be described, has not heretofore been put into print; though it is altogether likely that others beside myself have hit upon the device. The idea first occurred to me when showing visitors at the laboratory the workings of the compound microscope. The camera lucida always greatly pleases the uninitiated by its magical power of bringing the pencil into the field of the instrument, and of instantly conferring upon the novice the skill of the draftsman. It occurred to me, while exhibiting under the microscope and explaining some of the objects one usually shows to these people, such as algae or stained

sections of vegetable tissues which are not immediately comprehended by laymen, that by leaving the camera lucida in place I could point out to the observer the parts referred to in my attempted explanations. I fixed a paper upon the table top under the camera, hastily drew faint outlines of the objects in the field, and then, as my visitor gazed through the microscope, pointed with the pencil to these outlines, or, as the observer believed, to the various details within the scope of his vision.

When microscopes are to be used for demonstrating to classes illustrative material after lectures, or for brief examination of special preparations, by students in rotation during periods of general laboratory practice, the same method may advantageously be adopted. A not uncommon custom is to supply each microscope with a rough drawing, or with an illustration in an open book or on a chart. In the present method each microscope is provided with a camera lucida. Instrument, preparation, and paper are secured in place. The instructor adjusts things, and upon the paper in their proper positions writes the names of parts to which attention is to be directed, or places marks of indication, which afterwards to the students appear as labels in the preparations themselves.

STATE NORMAL SCHOOL,
TRENTON, NEW JERSEY.

The *Outlook* for November 28 prints the following appeal from one of its readers: "Would it perhaps be timely to ask your readers if, after the terrible forest fires of this summer and autumn, it might not be considerate to refrain from using trees for Christmas decorations? Thousands of evergreens must be sacrificed annually to meet the demands of the Christmas trade. Is it a custom worthy of being perpetuated?"

The *Boston Herald* states that one New Hampshire neighborhood is to furnish about 10,000 Christmas trees for Philadelphia. Several acres of young woodland is to be stripped of fine, young spruce trees, for which the owners will receive no more than six or seven cents each. The *Herald's* correspondent further says the "trees are sacrificed for only a few hours' enjoyment, and

the people in this locality are deploring the denuding of the land on this account."

The *Outlook* also prints a letter from Mr. Alfred Gaskill, state forester of New Jersey. It runs as follows :

"It is sometimes difficult to be patient with those who urge the abolition of Christmas greens for the sake of the forests. To what better use can a tree be put than to gladden half a dozen, or half a thousand, child hearts on Christmas Eve? Is the lumber from a whole forest worth one telling of the legend of the *Weihnachtsbaum*? But the hope expressed in your issue of November 28 that there may be a way to have Christmas trees and forests too leads me to say that the fears of those who love the forests more than the children, or at least seem to do so, are groundless. If every family in this land had a fifteen-year-old Christmas tree every year, they could all be grown without difficulty on a third of a million acres, or less than one seventh of the forest area of this little State of New Jersey. Of course the cutting of trees as now carried on in Maine and elsewhere looks destructive, and often is destructive, yet the trouble is not with the business but with the way it is conducted. In other words, Christmas tree growing can and should be a regular industry. The trees can come in part from necessary thinnings in lumber stands, in part from plantations made for the specific purpose. It is quite as legitimate to plant a piece of land with balsam for Christmas trees as with peach trees. Both kinds will be cut down at about the same age. Several property-owners in this State are definitely planning to grow Christmas trees on land that is now yielding no valuable crop. The planting will convert ugly brown slopes to hills of green, for some years at least, and the venture promises to be a paying one.

"With respect to greens the case is not very different. The supply now comes mainly from waste places and is gathered by poor people who get their Christmas in that way. Holly is a most beautiful tree and its wood is valuable, yet scarcely a specimen found north of Virginia would yield as much in lumber as in greens. Laurel, or *Kalmia*, is the most generally used woody plant, and that use, too, ought to be legitimate. There is no de-

fense of the practice of stripping fence rows and park woods, and it should be stopped. But laurel is a forest weed; it interferes with the development of young trees and is a nuisance where silviculture is practiced. We have in this State an area of 15,000 or 20,000 acres on which 'nothing of value will grow — only laurel and scrub-oak.' I do not know who owns this land, but I do know that the glory of the flowers in June does little toward paying taxes, and I am quite sure that any one who wants to gather greens there will find little objection.

The problem of Christmas greens, if it be a problem at all, can be solved by the simplest measures of control. Restrict cutting of trees or shrubs where the act will cause a disfigurement, but encourage the use of all the evergreen plants, and their propagation, as a means of making the earth more fruitful. Trees are for use, and those who would save every tree must be reminded that mere saving is waste. The wise, the necessary thing is to make them satisfy the needs of man; some for an hour's delight at Christmas time, some for warmth and shelter, all to delight the eye and cheer the heart until the time for sacrifice comes.

Change of sex in plants is the subject of an article by Mr. M. J. Iorns, of Porto Rico, in *Science* for July 24. The following is quoted in part only: "While change of sex among the phanerogams is not unknown yet it is of such rare occurrence that any well-demonstrated instances as those shown by the *Caricas* under observation are worthy of careful study. This is especially true when that change can be brought about by cultural methods as seems to be clearly proved in the present instance.

"*Carica papaya* is a tropical, rapidly growing tree-like form belonging to the Passifloreae family. As found in Porto Rico it is distinctively dioecious, the monoecious form being very rare except when produced as were the ones under observation. The tree is non-branching, but will readily develop lateral buds if the terminal bud is destroyed." The staminate flowers "developed successively, continuing over a long period of time, so that there is no time during the year when flowers are not shedding pollen. The pistillate tree bears axillary flowers of a very different form

from the staminate" which are borne on an unbranched peduncle usually varying in number from one to five. "Of these only one, with rare exceptions, sets fruit. It is said that the flowers are sometimes perfect, but such have not come under my notice as yet. The fruit varies in form from oval to a distinctively necked pear shape and in weight from three pounds to ten pounds or even more. The fruit in some varieties is very delicious and has many medicinal properties ascribed to it, so that the plant is of enough value economically aside from its botanical interest to be worthy of careful study.

"The change of sex in the first tree noted was brought about accidentally. A staminate tree of some age had its terminal bud accidentally injured. The staminate flower clusters produced shortly afterwards contained pistillate flowers in the terminal group. These flowers set and developed good-sized fruits."

The natives stated that the "removal of the terminal bud in the new of the moon would usually cause this transformation. Other trees growing on the grounds were at once set aside for experimental purposes and the tops were removed at different phases of the moon to disprove the moon's having any effect and also to show, if possible, what were the necessary conditions, if any, outside of the mere removal of the terminal bud. Thus far it is clearly shown that the removal of the terminal bud does cause the change, but also that some other condition is necessary, as only a part of those thus treated have thus far developed any pistillate flowers. The moon's phase does not appear to have any control, though, strange to say, those treated at a fairly definitely recurring period are the ones that show change. It is possible that the plant has definite short cyclic periods of growth and that it is necessary to remove the tip at some definite phase of this cycle in order to produce the development of fertile flowers. If this be true and this cycle should accidentally coincide fairly well with the moon's phases, the belief in moon influence would naturally arise.

"This view of an approximately monthly periodic cycle of growth has several things to support it. The chief of these is found in continuous development of flowers and fruit. At no

time during the year were the trees under observation without both flower and fruit. On the other hand, there are times when growth is more rapid, more flowers are developed and the terminal nodes elongate much more rapidly. The exact time of these periods has not yet been determined definitely, but data are being collected.

“The habit of the plant is being closely studied to determine the characteristics of each change and at what point in this growth the tips must be removed to produce the changes under discussion. It is possible that the power to produce pistillate flowers is inherent in the plant, being dormant unless some shock is given to destroy the equilibrium of the growth forces. This inherent quality is indicated by the fact that in some countries the plants are sometimes found naturally monoecious.”

NEWS ITEMS

Kohang Yih, of China, is investigating the tobacco industry in the United States.

Oberlin College has recently received from Mrs. Mary F. Spencer a collection of several thousand European plants.

The Yale Forest School has recently acquired a thousand more acres at the reservation near Milford, Pennsylvania.

The Transvaal is planning an agricultural college; Dr. F. M. Smith is here making a study of American management.

Dr. J. E. Kirkwood, formerly of Syracuse University, is now at the Tucson Desert Botanical Laboratory engaged in research work.

Dr. Carl L. Alsberg, of the Harvard Medical School, has resigned to conduct the Department of Agriculture investigations on poisonous plants.

Mr. W. S. Harwood, of California, the author of “New Creations in Plant Life, or Life and Works of Luther Burbank,” died in November.

Dr. Shigeo Yamanouchi, assistant in botany in the University of Chicago, is spending three months at the marine biological station at Naples.